[redacted] 25X1

P-185

September 10, 1958

[redacted] 25X1

Subject: Contract RD-94
Task Order No. 2

[redacted] 25X1

Enclosed you will find ten (10) copies of a report entitled "Audio Noise Reduction Circuit" (Additional Data). This report covers the period from March 15, 1958 to June 30, 1958 and is dated July 1,1958.

Please acknowledge receipt of this material by signing the original copy of the enclosed [redacted] 25X1
Shipping Invoice No. 11342 and returning it to this office.

A receipt for Classified material is also enclosed for your signature.

Very truly yours,

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f-14608

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CONFIDENTIAL

Work
Covering the Period
March 15, 1958 to June 30, 1958

Report Date: July 1, 1958

AUDIO NOISE REDUCTION CIRCUIT

ADDITIONAL DATA

25X1

During the period since the final report was prepared, several additional tests have been performed using the threshold noise reducer. The following circuit conditions have been used.

1A. 110 channel band pass filters with bandwidths similar to the sample shown in upper part of Figure 32 of the Final Report were used with a square law non-linear characteristic. Refer to Figure 1A.

2A. 110 channel band pass filters with bandwidths similar to the sample shown in the lower part of Figure 34 of the Final Report were used with a square law non-linear characteristic. Refer to Figure 1A.

3A. 110 channel band pass filters with bandwidths similar to the sample shown in the lower part of Figure 34 of the Final Report were used with a fourth power non-linear characteristic. Refer to Figure 2A.

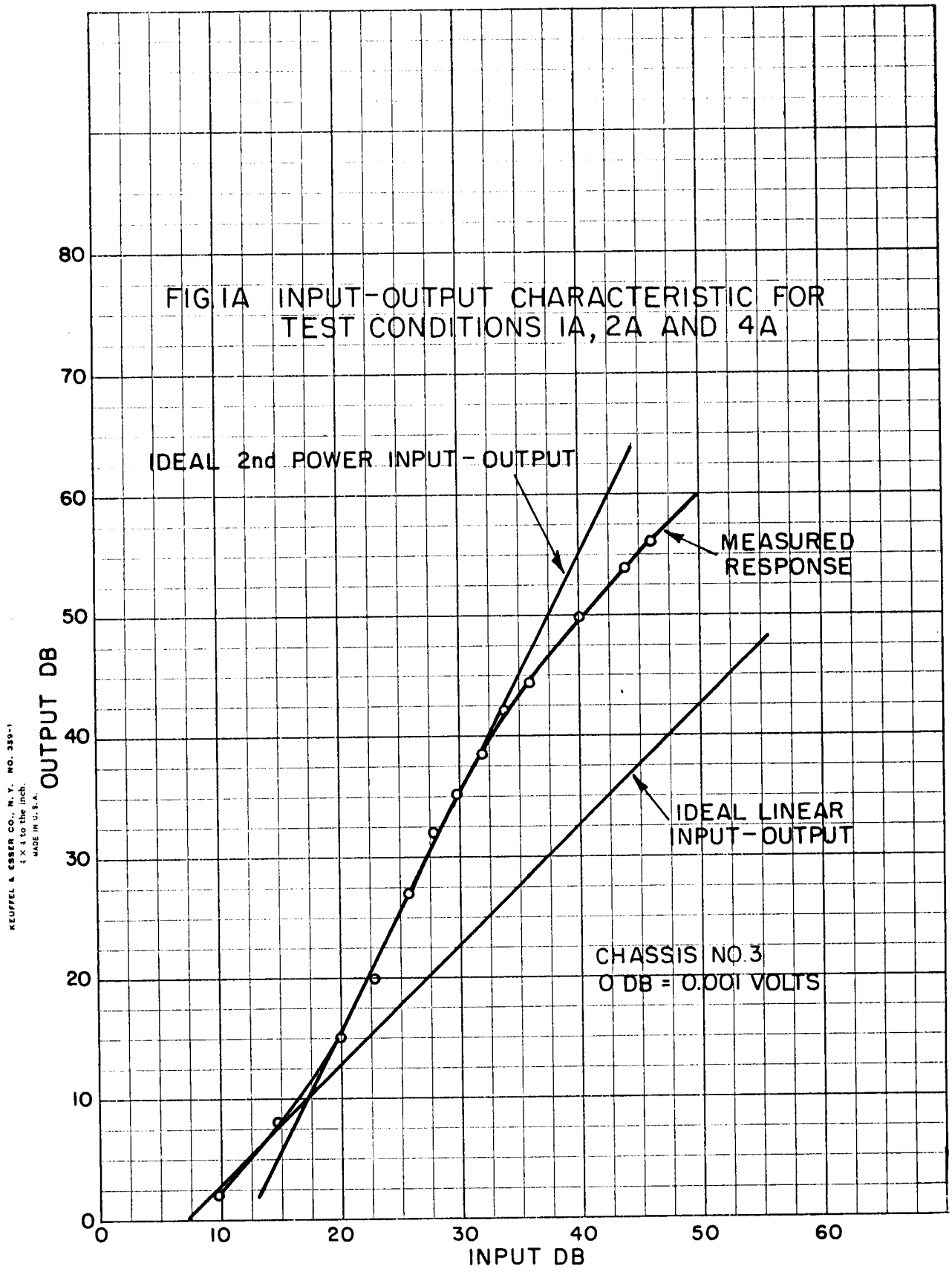
4A. 11 chassis band pass filters as shown in Figure 14 of the Final Report were used with a square law non-linear characteristic. Refer to Figure 1A for this characteristic.

5A. 11 chassis band pass filters as shown in Figure 14 of the Final Report were used with a sharp cut-off non-linear characteristic. Refer to Figure 3A for this characteristic.

In cases 4A and 5A the 110 channel filters were by-passed; only the 11 chassis filters were used. These five additional circuit conditions were tested in the same manner as described in the Final Report. Oscillograms of the test results are shown in Figures 4A through 6A.

The square law and fourth power characteristics provided an increase in the signal-to-noise ratio as is evident in the oscillograms. They also eliminated the sharp switching transients or "birdies" caused by sharp non-linear characteristics. It was felt that some words were heard very clearly through the noise reducer with the 4th power characteristic, but none of these additional circuit conditions provided a substantial improvement in intelligibility over the signal as heard through the by-pass circuit.

The tests reported here conclude the presently scheduled evaluation measurements.



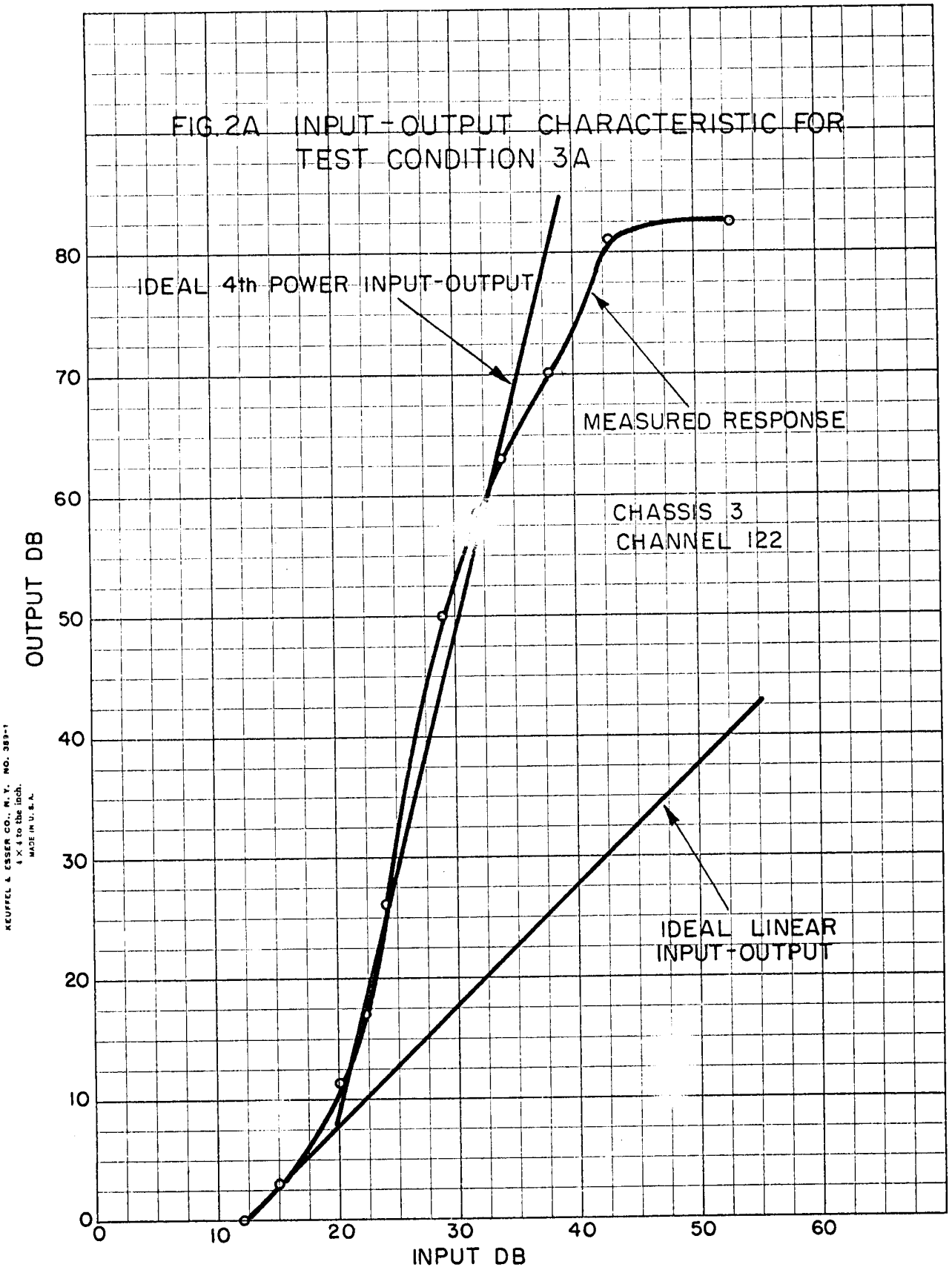
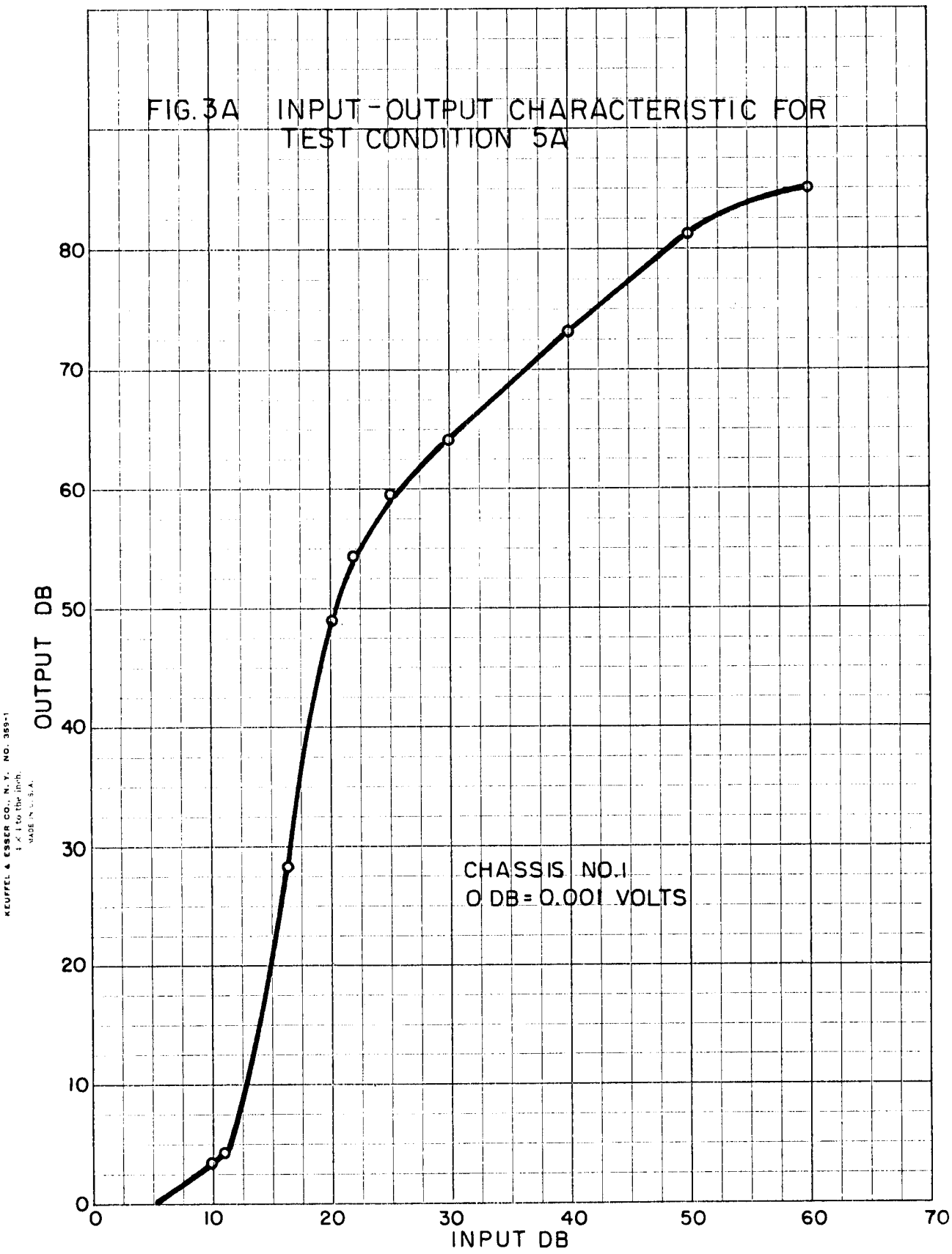
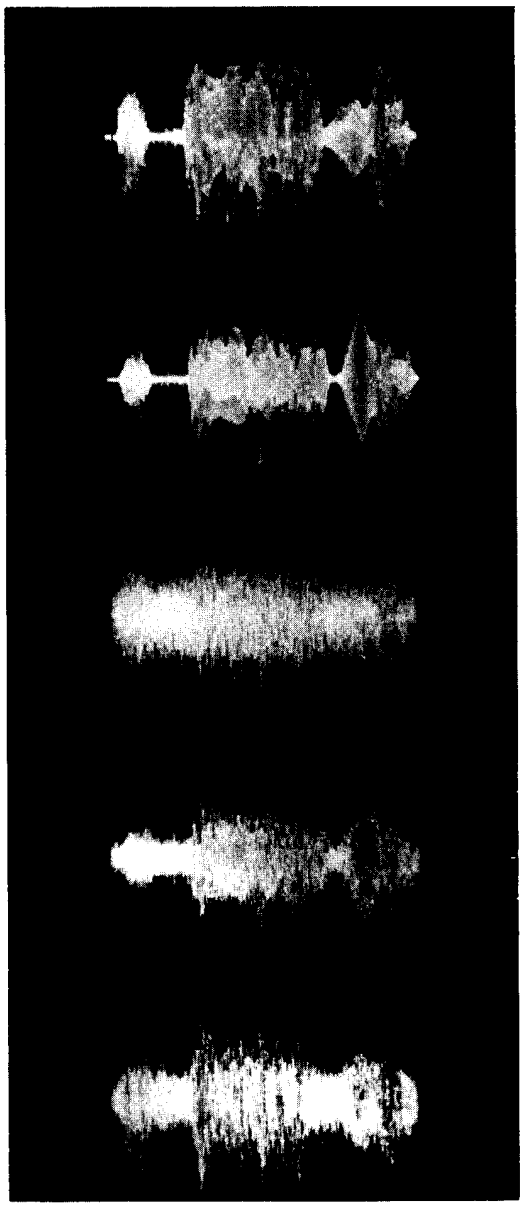


FIG. 2A INPUT-OUTPUT CHARACTERISTIC FOR TEST CONDITION 3A

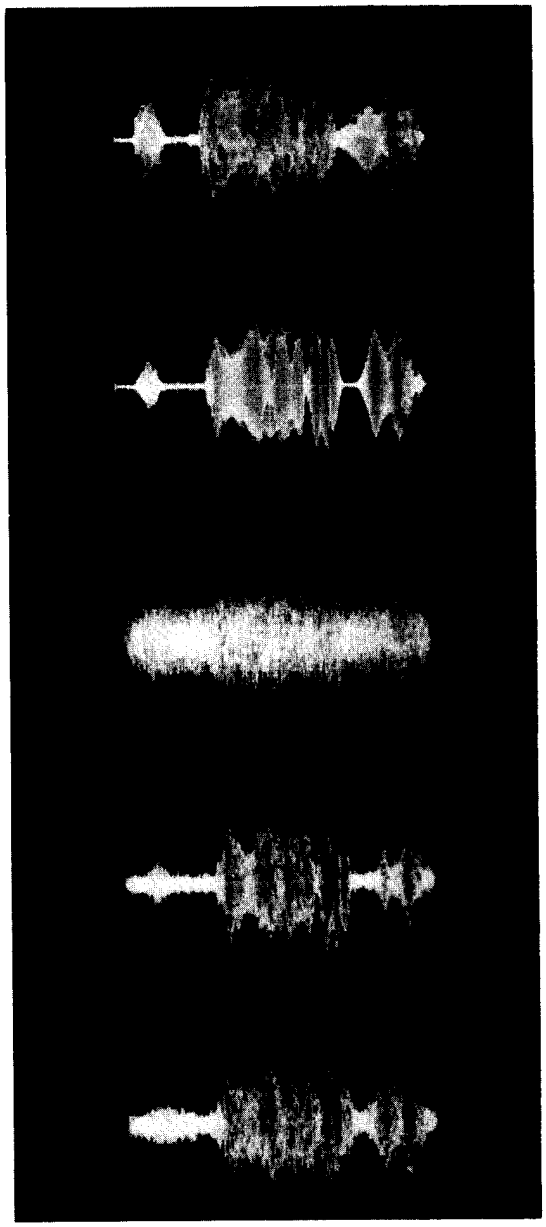




BANDWIDTH = -3DB
THRESHOLD SETTINGS - FLAT
NOISE SPECTRUM - FLAT
NON-LINEAR CHARACTERISTIC ≐ 2nd POWER

FIGURE 4A

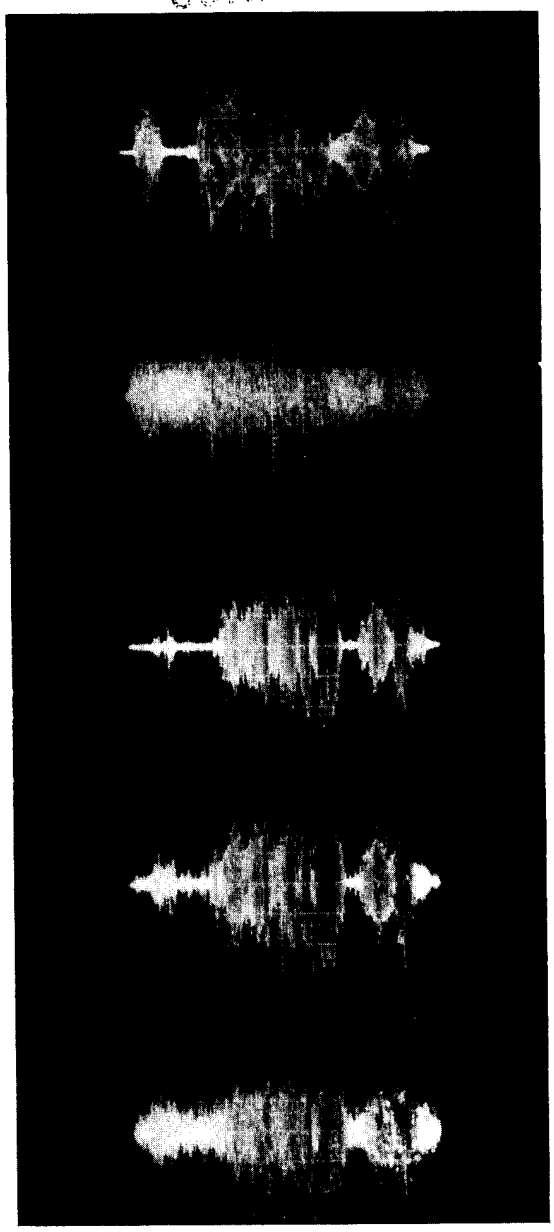
OSCILLOGRAMS SHOWING EFFECTIVENESS OF NOISE REDUCER, CONDITION 2A



BANDWIDTH = −3 DB
THRESHOLD SETTING — FLAT
NOISE SPECTRUM — FLAT
NON-LINEAR CHARACTERISTIC = 4th POWER

FIGURE 5A

OSCILLOGRAMS SHOWING EFFECTIVENESS OF NOISE REDUCER, CONDITION 3A



11 CHASSIS FILTERS
THRESHOLD SETTINGS — FLAT
NOISE SPECTRUM — FLAT
NON-LINEAR CHARACTERISTIC = SHARP CUTOFF

FIGURE 6A

OSCILLOGRAMS SHOWING EFFECTIVENESS OF NOISE REDUCER, CONDITION 5A